

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-21. **(Canceled).**

22. **(Previously presented)** A system for the determination of the location of a mobile station (MS) equipped with embedded GPS signal reception capability and equipped to operate within a wireless communications network based on the Global System for Mobile communications (GSM), the system comprising position-determination equipment (PDE) including: a plurality of location measurement units (LMUs) each of which is embedded at a networked land station (LS) for signal detection and processing, wherein each LMU is connected to and receives signals from a GPS antenna and from wireless communications band antenna(s); a serving mobile location center (SMLC) at a central collection-and-analysis land station (LS), said SMLC being configured to assemble measurements from the LMUs and to calculate the MS location; and a location gateway (LG) at the central land station configured to receive location requests from a mobile positioning center (MPC) specifying the identity and serving cell assignment data for a MS of interest, said location gateway providing a PDE portal for the reception of location requests and for provision of location-determination results to the MPC;

wherein the system is programmed and configured to perform the following steps:

a request for the location of a particular MS of interest originating at the MPC is received at the LG, and the LG validates the authenticity and authorization for the location request, wherein a valid request identifies the serving cell and associated communications protocol parameters, including assigned frequency, that shall apply for the communications with the MS;

the LG provides the request to the SMLC appropriate for the determination of locations for MSs operating in the vicinity of the serving cell;

the selected SMLC receives and reviews any request to determine the list of cooperating LMUs that are optimal for supporting location requests associated with the identified serving cell;

in anticipation of the need to rapidly support a request for assisting GPS data, the SMLC maintains and evaluates current GPS configuration data that specify the location and motion parameters for the GPS satellite vehicles (SVs), wherein these data are persistently monitored by the LMUs through their GPS receivers, and wherein the LMUs provide to the SMLC the Doppler shifts, pseudoranges, and relevant demodulated navigation message data for the GPS SV telemetry streams received at the LMU positions;

the SMLC receives these GPS SV data periodically communicated from the LMUs, and for each potential serving cell, the SMLC evaluates and derives a current list that specifies the optimal SVs in potential view near the cell site, along with the restricted domains of Doppler shift and pseudorange that are anticipated to be appropriate for assisting in an AGPS reception; and

in order to exploit the availability of the up-to-date descriptions of the GPS configuration parameters to support a reduced time to first fix (TTFF) from the MS GPS receiver, the SMLC responds to a particular location request and provides the AGPS parameters appropriate for the vicinity of the serving cell site, wherein these AGPS parameters are received by the LG and are provided to the MPC to be communicated to the MS in a GPS data request.

23. **(Previously presented)** A system as recited in claim 22, wherein the SMLC also proceeds to request the development of data related to the MS location from all LMUs that are optimally configured to cooperate in the determination of locations served by the identified cell site.

24. **(Previously presented)** A system as recited in claim 23, wherein the LMUs apply their signal acquisition and processing facilities to detect and extract the data appropriate for support of the location-determination calculations, and these LMU data are then provided to and received by the SMLC for integration into the location processing.

25. **(Previously presented)** A system as recited in claim 24, wherein, in support of the location determinations, the GPS data relevant to the MS location is sensed by the MS receiver

with whatever assistance its processing facilities are configured to exploit, and the MS develops this data and communicates the data to the serving cell site for inclusion in the location calculations, wherein the MS's GPS data is provided to the PDE by way of the wireless communications system (WCS), and wherein the LG receives these data from the WCS or, optionally, the LMUs receive, demodulate, and provide the MS's GPS data from the MS response message.

26. **(Previously presented)** A system as recited in claim 25, wherein the SMLC receives the GPS information that the MS has provided for insertion into the integrated location-determination calculations.

27. **(Previously presented)** A system as recited in claim 26, wherein, with the data received from the LMUs and from the MS, the SMLC integrates all of the data in deriving an optimal probable estimate for the MS location parameters.

28. **(Previously presented)** A system as recited in claim 27, wherein the location-related measurements obtained from the cooperating LMUs include data of various forms and positional sensitivities from LMU positions and equipment that support various individual accuracies, and the GPS data may individually define or support stand-alone data location, with potential correctable biases, or may only provide pseudorange and Doppler measurements for a limited, incomplete set of SV signals due to occlusion or distortion of the GPS signal propagation paths, and wherein the SMLC combines all of the data provided and integrates them into probability-based evaluations that incorporate whatever additional relevant collateral information is available to further condition the location estimate.

29-48. **(Canceled).**